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(54) Title: METHODS FOR PREPARING PERFLUORINATED [^{18}F]-RADIOLABELLED NITROIMIDAZOLE DERIVATIVES FOR CELLULAR HYPOXIA DETECTION

(57) Abstract: The present invention relates to chemical synthesis of radiolabelled perfluorinated bioactive compounds. More particularly, the present invention relates to radiolabelled compounds to be used as indicators for tissue hypoxia. More particularly, the present invention relates to the synthesis and the use of [^{18}F] labelled perfluorinated nitroimidazole compounds having an incorporation of [^{18}F] atoms characterized by a specific radioactivity of the compound comprised between 1 and 30 Ci/mmol, preferably between 1 and 20 Ci/mmol, preferably 1 and 10 Ci/mmol. More particularly to [^{18}F] labelled EF3 or [^{18}F] labelled EF5. The present invention also relates to a method for the detection of tissue hypoxia in a patient comprising introducing an [^{18}F] labelled nitroimidazole compound into said patient, imaging tissue hypoxia in said patient, and, quantifying tissue hypoxia in said patient.